Claims

1. A multi-line utility power transmission system comprising:

a first power transmission line having a first impedance characteristic;

a second power transmission line, in parallel with the first power transmission line, and having a second impedance characteristic less than the first impedance characteristic; and

a power flow controller, coupled to the second power transmission line, for controlling at least one of the magnitude and direction of the power flowing through the second power transmission line.

2. The multi-line power transmission system of claim 1 wherein the second power transmission line includes a superconductor.

3. The multi-line power transmission system of claim 2 wherein the superconductor is a high temperature superconductor.

4. The multi-line power transmission system of claim 3 wherein the high temperature superconductor is chosen from the group consisting of: thallium-barium-calcium-copper-oxide; bismuth-strontium-calcium-copper-oxide; mercury-barium-calcium-copper-oxide; and yttrium-barium-copper-oxide.

5. The multi-line power transmission system of claim 3 further comprising a refrigeration system for cooling the high temperature superconductor at a temperature sufficiently low to exhibit superconducting characteristics.

6. The multi-line power transmission system of claim 1 wherein the first power transmission line is a cross-linked polyethylene power transmission line.

7. The multi-line power transmission system of claim 7 wherein the power flow controller is a reactor.

8. The multi-line power transmission system of claim 1 wherein the power flow controller is a bi-directional power flow controller that regulates the direction of the power transferred through the second power transmission line.

9. The multi-line power transmission system of claim 8 wherein the bi-directional power flow controller is a phase angle regulator.

10. A method comprising:

connecting a first power transmission line having a first impedance characteristic in parallel with a second power transmission line having a second impedance characteristic less than the first impedance characteristic;

supplying power to the first power transmission line and the second power transmission line;

determining a level of power flow for the second power transmission line; and

regulating the amount of power transferred through the second power transmission line.

11. The method of claim 10 further comprising regulating the direction of the power transferred through the second power transmission line.

12. The method of claim 10 further comprising forming the second power transmission line with a superconductor.

13. The method of claim 12 wherein the superconducting power transmission line is a high temperature superconductor.

14. The method of claim 10 further comprising maintaining the high temperature superconductor at an operating temperature sufficiently low to enable the high temperature superconductor to exhibit superconducting characteristics.

15. The method of claim 10 further comprising forming the first power transmission line with a cross-linked polyethylene.